

**RESEARCH PROBLEM STATEMENT**

<b>DATE:</b> 09/24/2020	<b>PROJECT AREA:</b> Materials <span style="float: right;">▼</span>
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**TITLE:** Use of Super Air Meter (SAM) in Determining Air Content in Fresh Concrete

**PROBLEM STATEMENT:**

The freeze-thaw durability of concrete is highly dependent on the air void system, which includes the total air content, and its size and distribution. However, the widely utilized test method (ASTM C231) for fresh concrete only allows for the determination of total air content. ASTM C231 is not capable of measuring the size of air voids and their distribution in the mixture. To address this need, a Super Air Meter (SAM), can be used. It has been reported that the SAM test results correlate well with the spacing factor measurement from ASTM C457 and freeze-thaw performance data. The SAM test is capable of quantifying the spacing factor in the form of a SAM number. However, this test method has not been studied in Arkansas for its possible implementation by the concrete producers to prepare durable concrete.

**OBJECTIVES:**

The main objectives are:

- (i) Evaluate air contents of different fresh concrete using a traditional pressure meter and a SAM
- (ii) Determine the air content of hard concrete of selected mixtures
- (iii) Assess the usefulness of a SAM in determining air void size and distribution
- (iv) If recommended, develop guidelines for using a SAM and train ARMA members and contractor how to use a SAM

**FORM OF RESEARCH IMPLEMENTATION AND RETURN ON INVESTMENT:**

1. Technical report containing the findings of the study.
2. Train prospective users how to use SAM and interpret test results.

The SAM-based air content measurement technique is expected to provide a more accurate estimation of air content, thus there will be less premature damage in pavement due to freeze-thaw actions.

<b>Estimated Project Duration:</b> 24 Months
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Standing Subcommittee  
Ranking

7/8

Advisory Council  
Ranking

21

Statement Combined with  
Statement Number(s)

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